

**Tab L. “Means for selecting the product catalogs to search”**

**Claims using this term: claim 3 of the '683 patent**

**Lawson means-plus-function term 8**

The structure corresponding to this term is linked to portions of the specification of the '683 patent beginning at 3:61 and ending at 17:17, as shown below.

**Lawson's Proposed Construction**

**Function:** Selecting two or more product catalogs to search

**Means:** Two means for selecting two or more product catalogs are disclosed:

**Structure No. 1.** Software initiated from catalog search program (50 or 250) running on local computer (20 or 220) that consists of the following step:

a. selecting two or more product catalogs from a list of available catalogs displayed to a user; and

**Structure No. 2.** Software initiated from requisition/purchasing system (40 or 240) running on local computer (20 or 220) that consists of the following steps:

a. entering vendor identification information into requisition/purchasing system; and

b. communicating vendor identification from requisition/purchasing system to catalog search program running on same local computer via the DDE protocol of interface (60).

**Tab L. “Means for selecting the product catalogs to search”****Function**

<b><u>Lawson’s Proposed Definition</u></b>	<b><u>Lawson’s Proposed Definition</u></b>
<b><u>Function:</u></b> Selecting two or more product catalogs to search	“means for selecting the product catalogs to search” (’683 patent, claim 3)  “at least two product catalogs” (’683 patent, claim 3)  “among the selected product catalogs” (’683 patent, claim 3)

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means for processing the requisition to generate one or more purchase orders for the selected matching items; and  
means for determining whether a selected matching item is available in inventory.

2. The electronic sourcing system of claim 1 wherein the purchase orders include data relating to a catalog number for the selected matching items.

3. An electronic sourcing system comprising:  
at least two product catalogs containing data relating to items associated with the respective sources;  
means for selecting the product catalogs to search;  
means for searching for matching items among the selected product catalogs;  
means for building a requisition using data relating to selected matching items and their associated source(s);  
means for processing the requisition to generate one or more purchase orders for the selected matching items; and  
means for converting data relating to a selected matching item and an associated source to data relating to an item and a different source.

4. The electronic sourcing system of claim 3 further comprising means for determining whether a selected matching item is available in inventory.

5. The electronic sourcing system of claim 3 further comprising means for determining the applicable price of a selected matching item.

6. An electronic sourcing system comprising:  
a database containing data relating to items associated with at least two sources;  
means for searching for matching items in the database;  
means for building a requisition using data relating to selected matching items and their associated source(s);  
means for processing the requisition to generate one or more purchase orders for the selected matching items; and  
means for converting data relating to a selected matching item and an associated source to data relating to an item and a different source.

7. An electronic sourcing system of claim 6 wherein the requisition includes matching items from at least two sources.

8. The electronic sourcing system of claim 6 wherein the purchase orders include data relating to catalog numbers.

9. The electronic sourcing system of claim 6 further comprising means for determining whether a selected matching item is available in inventory.

10. The electronic sourcing system of claim 6 further comprising means for determining the applicable price of a selected matching item.

11. An electronic sourcing system comprising:  
at least two product catalogs containing data relating to items associated with the respective sources;  
means for searching for matching items among the product catalogs;  
means for building a requisition that includes a first matching item and a second matching item, each associated with a different source;  
means for processing the requisition to generate purchase orders for the first and the second matching items; and  
means for converting data relating to a selected matching item and an associated source to data relating to an item and a different source.

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12. The electronic sourcing system of claim 11 wherein a first purchase order includes data relating to the first matching item.

13. The electronic sourcing system of claim 12 wherein a second purchase order includes data relating to the second matching catalog item.

14. An electronic sourcing system comprising:  
data relating to items associated with at least two sources maintained so that selected data may be searched separately;  
means for searching for matching items among the selected data;  
means for building a requisition using data relating to selected matching items and their associated source(s);  
means for processing the requisition to generate purchase orders using data relating to the selected matching items and their associated source(s); and  
means for converting data relating to a selected matching item and an associated source to data relating to an item and a different source.

15. The electronic sourcing system of claim 14 wherein the purchase orders use data relating to at least two sources.

16. The electronic sourcing system of claim 14 wherein the purchase orders use data relating to catalog numbers.

17. The electronic sourcing system of claim 14 further comprising means for determining whether a selected matching item is available in inventory.

18. The electronic sourcing system of claim 14 further comprising means for determining the applicable price of a selected matching item.

19. An electronic sourcing system comprising:  
a database containing data relating to items associated with at least two vendors maintained so that selected portions of the database may be searched separately;  
means for searching for matching items in the selected portions of the database;  
means for building a requisition that includes data relating to selected matching items;  
means for processing the requisition to generate purchase orders for selected matching items.

20. The electronic sourcing system of claim 19 wherein the purchase orders include data relating to vendor catalog numbers.

21. The electronic sourcing system of claim 19 further comprising means for converting data relating to a selected matching item and an associated source to data relating to an item and a different source.

22. The electronic sourcing system of claim 19 further comprising means for determining whether a selected matching item is available in inventory.

23. The electronic sourcing system of claim 19 further comprising means for determining the applicable price of a selected matching item.

24. An electronic sourcing system of claim 19 wherein the requisition includes matching items from at least two sources.

25. The electronic sourcing system of claim 24 wherein the purchase orders include data relating to the source associated with the selected matching item.

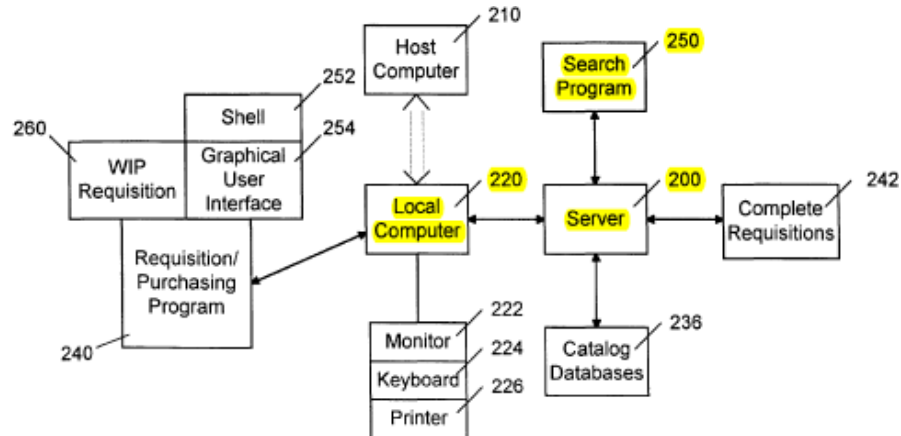
26. A method comprising the steps of:  
maintaining at least two product catalogs on a database containing data relating to items associated with the respective sources;  
selecting the product catalogs to search;  
searching for matching items among the selected product catalogs;

**Tab L. “Means for selecting the product catalogs to search”**

### Means: Structure #1

<p><b><u>Lawson's Proposed Definition</u></b></p>	<p><b><u>Lawson's Proposed Definition</u></b></p>
<p><b><u>Means:</u></b> Two means for selecting two or more product catalogs are disclosed:</p>	
<p><b><u>Structure No. 1.</u></b></p> <p>Software initiated from catalog search program (50 or 250) running on local computer (20 or 220) that consists of the following step:</p>	<p>“As shown in the embodiment of <b>FIG. 1A</b>, Fisher RIMS 40 and TV/2 search program 50 are run by local computer 20.” (’683 patent, Detailed Description of the Drawings, 4:7-10 (emphasis added))</p> <p><b>Figure 1A</b> shows the TV/2 search program (50) running on local computer (20) and keyboard (24) at local computer (20):</p> <p style="text-align: right;"><b>FIG. 1A</b></p> <p>(’683 patent, Fig. 1A)</p>

**Figure 1B** shows catalog search program (250) running on local computer (220). The search is initiated at the keyboard (224) of local computer (220). The keyboard is the only structure shown and described:



**FIG. 1B**

('683 patent, Fig. 1B)

**“Local computer 20 also preferably runs Shell program 52, which operates under search program 50 and is used to customize search program 50 to generate Order Lists 48 (shown in FIG. 1C) with particular fields of formatted data 30 about the items selected using search program 50. Local computer 20 is preferably capable of running both a RIMS program 44 and Shell program 52 at the same time (i.e., in a multi-tasking environment), but the user of local computer 20 usually sees only RIMS program 44 or Shell program 52 at one time in the foreground on monitor 22.”** ('683 patent, Detailed Description of the Invention, 4:26-35 (emphasis added))

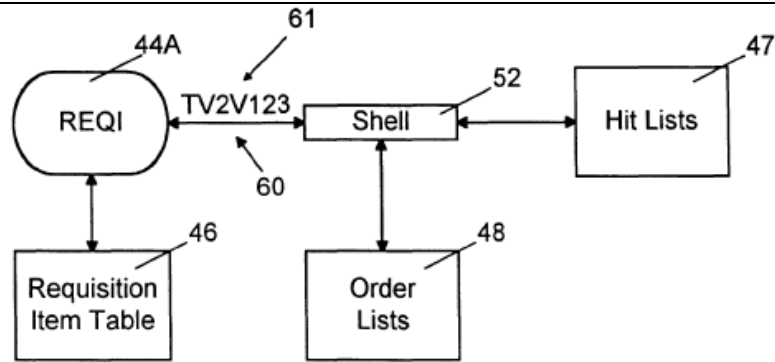


FIG. 1C

('683 patent, Fig. 1C)

“In that environment, **search program 250**, which preferably comprises TV/2 search program 250, and catalog databases 236 **are stored on file server 200. . . . One or more of these may be copied from server 220 when needed.**” ('683 patent, Detailed Description of the Invention, 17:3-17 (emphasis added))

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requisition/purchasing system for generating a requisition including entries for the desired catalog items.

In accordance with the invention, an electronic sourcing system and method used by the system are provided. The system includes a computer that maintains a catalog database of data including product information (such as product identification information, and descriptive information) relating to catalog items available from vendor product catalogs, and a means for building (generating) a requisition including at least one requisitioned item. Information at least partially identifying an item desired to be requisitioned is entered by a user, and utilized by a means for searching the database for catalog items matching that information and for selecting at least one catalog item located as a result of the search. Text describing the catalog items, and images of the items, may be viewed. Data identifying selected catalog items are communicated to the requisition building means, which generates a requisition including entries for items corresponding to the selected catalog items. Additionally, the invention includes a means for checking the availability in one or more inventory locations of the corresponding desired catalog items, and for generating one or more purchase orders for desired items from inventory locations stocking the items.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and advantages of the invention will be apparent from consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1A is a block diagram showing one exemplary embodiment of the overall system of the present invention;

FIG. 1B is a block diagram showing another exemplary embodiment of the overall system of the present invention;

FIG. 1C is a block diagram showing a portion of the embodiment of FIG. 1A in greater detail;

FIG. 2 is a block diagram showing the flow of control and interaction between the various programs and data screens of the programs used for requisition management and vendor catalog searching of the present invention; and

FIG. 3 is a block diagram showing a portion of a system (Fisher RIMS) for requisition management, including the electronic sourcing system of the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

FIGS. 1A and 1B show preferred embodiments of the electronic sourcing system 5 of the present invention. As shown in FIG. 1A, a local computer 20, which is preferably located at or near a Customer site and the site of Just-In-Time ("JIT") Inventory, is preferably used by an on-site Customer Service Representative ("CSR") dedicated to a Customer to assist that Customer in requisitioning items needed.

Local computer 20 includes conventional color monitor 22 and alphanumeric keyboard 24 including twelve function keys F1, F2, . . . F12. Local computer 20 is also coupled to printer 26.

Local computer 20 is preferably a conventional micro-computer (such as a 386-, 486- or Pentium-class personal computer) capable of operating the required programs and of transmitting and receiving the required communications, running the OS/2 operating system 32 and also running the CICS OS/2 application 34, both of which are available from IBM.

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Electronic sourcing system 5 also includes a requisition/purchasing system 40, preferably but not necessarily the Fisher RIMS system, and a search program 50 that is capable of searching through large volumes of information quickly and accurately. Preferably but not necessarily, the Technical Viewer 2 search program ("TV/2"), available from IBM, is used as search program 50. As shown in the embodiment of FIG. 1A, Fisher RIMS 40 and TV/2 search program 50 are run by local computer 20.

Fisher RIMS system 40 is comprised of numerous program modules, including several programs 44, which operate within CICS environment 34 of OS/2 operating system 32. Programs 44 include, among others, Requisition Management ("REQI") program 44A, Inventory Sourcing program or programs 44B, Requisition Maintenance program 44C, Customer Variable program 44D, and Order Header program 44E, each of which will later be described in greater detail. REQI program 44A is most often the RIMS program 44 that interfaces with TV/2 search program 50.

Fisher RIMS system 40 also includes several Fisher RIMS databases 42. These databases 42 preferably include requisition databases 42A, inventory databases 42B, and customer-specific databases 42C, each maintained within OS/2 operating system 32.

Local computer 20 also preferably runs Shell program 52, which operates under search program 50 and is used to customize search program 50 to generate Order Lists 48 (shown in FIG. 1C) with particular fields of formatted data about the items selected using search program 50. Local computer 20 is preferably capable of running both a RIMS program 44 and Shell program 52 at the same time (i.e., in a multi-tasking environment), but the user of local computer 20 usually sees only RIMS program 44 or Shell program 52 at one time in the foreground on monitor 22.

Local computer 20 is also provided with a catalog database 36 comprised preferably of at least two vendor product catalogs. The catalogs, and hence catalog database 36, preferably include such information as part number, price, catalog number, vendor name or I.D., and vendor catalog number, as well as textual information and images of or relating to the catalog products. The nature of the business that the Customer using electronic sourcing system 5 conducts will determine which product catalogs are made a part of catalog database 36.

A feature of the present invention is the ability to search multiple catalogs from different suppliers. For example, catalog database 36 can contain the catalog or catalogs published by a vendor Distributor, having Distributor's catalog numbers for all listed products and vendor manufacturer's part numbers for many of the listed products. Catalog database 36 can further contain catalogs published by some of the vendor manufacturers, listing the manufacturers' part numbers for certain products correspondingly listed in the Distributor's catalogs and for certain products not listed in the Distributor's catalogs. Catalog database 36 can further contain catalogs published by outside suppliers, whether other manufacturers or other distributors, listing such vendor's products different from those in the Distributor's catalogs.

Where the Fisher RIMS system is in use with electronic sourcing system 5, a host computer 10 located at a Distributor site is also provided, as shown in FIG. 1A. Host computer 10 controls all inventory, pricing and requisitioning operations of the Distributor's regularly stocked items using host pricing and inventory databases 11. Host pricing and inventory databases 11 may include such information as: descrip-



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tions where a large number of CSRs may be placing orders directly on Distributor's host computer 210 for thousands of different customers who call in. In that environment, search program 250, which preferably comprises TV-2 search program 250, and catalog databases 236 are stored on file server 200. In this environment, file server 200 is a large personal computer, a work station or a mini-computer such as an IBM AS/400. Alternatively, the server 200 and a minicomputer (such as an IBM AS/400) can be independently connected to each local computer 200. Each CSR has a local personal computer 220 having a monitor 222, a keyboard 224 and a printer 226. Local computer 220 is provided with programs including requisition/purchasing program 240, Shell program 252 and a graphic user interface 254 (preferably EASEL Workbench program 254 for OS/2) for listing items. One or more of these may be copied from server 220 when needed. Work-in-progress requisitions 260 are established for each customer and are attached to graphic user interface 254. Server 200 maintains complete requisitions 242, in a manner similar to the manner in which local computer 20 maintains requisition databases 42 in the embodiment shown in FIG. 1A.

Normally, in such an environment, the CSR creates Order lists for customers by entering Distributor catalog numbers into graphic user interface 254 and connecting to the Distributor mainframe 210 for price and availability. For this purpose, each local computer is connected to host computer 210 via a phone/dataline and either a gateway or a mini-computer acting as a local host. When a customer asks for products by manufacturer part number or a competitor's catalog number, the CSR has access to cross-reference files, as earlier described, either maintained on the local host or maintained on the Distributor host computer 210.

Appropriate Distributor catalogs and manufacturer catalogs then are consulted, using TV-2 search program 250 and proper selection of Distributor catalogs and of catalogs and bulletins from manufacturers whose products Distributor regularly sells. Catalogs and bulletins are contained in catalog database 236. The resultant lists of products are then transferred by Shell program 252 to a work-in-progress requisition 260, and then entered from graphical user interface 254 directly onto Distributor's mainframe computer 210 as orders from the applicable customer to Distributor. The CSR, knowing which items are available from which Distributor warehouse and direct-shipping supplier, then may divide the customer's requested items into multiple orders, so as to assure that each order is completely filled by a single shipment. In this regional environment, file server 200 or the minicomputer acting as local host can maintain files of completed requisitions 242 which can be subsequently used for generating reports for customers in the region. Reports can be generated either from such local data or from data periodically downloaded to the local host from Distributor's host computer 210.

Another environment where the present invention can be used is in Distributor's purchasing department. The item lists created in that environment can include lists of items Distributor does not regularly stock or purchase, but for which particular customers indicate a requirement to buy. The file server 200 in that environment contains TV-2 search program 250, EASEL graphical user interface 254 and multiple catalog databases 236 containing catalogs similar to the Fairmont and NIST catalogs described above for the embodiment of FIG. 1A. The Distributor purchasing employee can receive by phone or via Distributor's host computer 210 requests for items not shown on Distributor's host databases either as regular products (type 03) or third

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party items purchased for particular customers on a regular basis (type 07 items). Transmitting certain such requirements to the applicable Distributor purchasing employee can be a function of the inventory sourcing routines of host computer, or may be directed by the Distributor CSR interfacing with the customer.

The Distributor purchasing employee can search appropriate catalogs using TV-2 search program 250, and can transfer the "Items Selected" to a product list in EASEL interface 254. The resultant list might display, for example, supplier part number, supplier, list price, product and catalog page, with access to other fields such as complete description (up to 500 characters). The Distributor purchasing employee can then either forward the information to the CSR, customer end user or customer purchasing employee who requested the item (to confirm that the requirement is being met) or contact the supplier to confirm pricing and availability. Once responses from either or both have been obtained, the Distributor purchasing employee can use the item list in EASEL interface 254 to create one or more of the following purchase orders:

1. an order from the customer to the supplier (an Administrative Purchase);
2. an order from the customer to Distributor (for a type 07 product); and
3. an order from the Distributor to the supplier (usually providing for direct shipment from the supplier to the customer or to a JIT site maintained by Distributor for the customer).

From the foregoing description, it should be apparent that the network arrangements of FIG. 1B can be used to apply the present invention in a variety of contexts. The context will dictate which catalog databases 236 are provided on file server 200: in the regional CSR environment, Distributor's catalogs can be present with a variety of catalogs and bulletins from manufacturers that Distributor regularly represents and a limited selection of outside suppliers; and in the Distributor purchasing environment, the number of outside supplier catalogs will be increased. The number of client (local) computers 220 and the number and size of catalog databases 236 will help dictate what size file server 200 is required. The operating environment (regional CSR site, on-site CSR, on-site CSR networked with Customer end users and with purchaser personnel or Distributor purchasing site) will also affect the catalog databases 236 included, file server 200 size and requisition/purchasing program 240 used. In some situations (e.g., purchasing) each client computer has an independent copy of requisition/purchasing program 240; in others (e.g., on-site CSR) a single copy of the requisition/purchasing program 240 is maintained with associated local databases on the server 200. Where the requisition/purchasing program 240 and local databases are maintained on file server 200, the local database is updated after each use for the benefit of subsequent users. For example, in an environment using Fisher RIMS for requisition/purchasing program 240, if a NIST standard is selected using TV-2 search program 250 and ordered using Fisher RIMS 240 (as either a type 07 purchase from Distributor or a type 05 administrative purchase from NIST), that item is available in the applicable database for subsequent requisitions. For example, a NIST standard ordered as a type 05 item will be stored in the local database on file server 200, with NIST as the vendor for subsequent administrative purchases by Customer. A NIST standard ordered from Distributor as a type 07 item will be stored in Distributor's host databases as a type 07 available to Distributor from NIST. The local databases on file server 200



**Tab L. “Means for selecting the product catalogs to search”****Means: Structure #1**

<b><u>Lawson’s Proposed Definition</u></b>	<b><u>Lawson’s Proposed Definition</u></b>
<p><b><u>Part 1a.</u></b> selecting two or more product catalogs from a list of available catalogs displayed to a user.</p>	<p><b>“When multiple catalogs are present</b> in catalog database 36, <b>search program 50</b> contains a function associated with the catalog symbol of the footer bar and screen window (not shown) for <b>selecting catalogs to be searched</b>. For example, the following choices might be available:</p> <ol style="list-style-type: none"> <li>1. Fisher General Catalog 93-94;</li> <li>2. Fairmont Supplies Catalog;</li> <li>3. NIST Standards Catalog; and</li> <li>4. Promega Biological Research Products Catalog.</li> </ol> <p>Fairmont and NIST catalogs list products not in the Fisher General Catalog, but many of the products listed in the Promega catalog are also listed in the Fisher General Catalog (identified by corresponding Fisher catalog numbers). If searching for a molecular biology product, the user would select the Fisher and Promega catalogs.” (’683 patent, Detailed Description of the Invention, 9:52-67 (link to function emphasized))</p>

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return to REQUI program 44A and its associated Requisition Management data screen 110 without processing any of the records.

ESCP program 80 links with Shell 52 and TV/2 search program 50 via DDE LINK 90. Shell 52 and TV/2 search program 50 search in catalog database 36 for the item or items desired to be requisitioned that has or have been passed from ESRC program 70 to ESCP program 80. Catalog database 36 contains the following fields: vendor name, vendor number, vendor part (catalog) number, product description, list price, page number, quantity, unit, catalog text, and catalog images. Shell 52 and TV/2 search program 50 may, if desired, search the keyword field or any other field shown in Appendix VII. However, not all fields may appear on the monitor 22 of local computer 20, although they are stored in memory.

After the user has pressed the F11 key from Requisition Management data screen 110 and control has been passed from REQUI program 44A to Shell 52 and TV/2 search program 50, monitor 22 of local computer 20 will show a footer bar representative of Shell 52 at all times that the user is in the TV/2 search program 50. The footer bar, which also includes appropriate icons, is used to make choices within Shell 52. A sample of the footer bar (without the icons) representing Shell 52 is shown at the base of Appendices III–VII. In the screens of Appendices III–VI, this footer bar is active to select functions. In the screen of Appendix VII, this footer bar is in the background and another footer bar is used to select functions.

If the user has marked an item on Requisition Management data screen 110 with the designation "S," the entered data at least partially describing that item will be sent to Shell 52 and TV/2 search program 50A in the manner described above. TV/2 search program 50 will search catalog database 36 for all items that match the search field sent over from REQUI program 44A and Requisition Management data screen 110. When a search is performed in Shell 52 and search program 50, a Hit List 47 is produced, as indicated in FIG. 1C. The user would see on monitor 22 of local computer 20 a Hit List 47 screen representing limited data about all matching catalog items that were located in catalog database 36 as a result of the search. A sample Hit List 47 produced from a search initiated when the entry "OVENS" is received as the description or keyword by search program 50 from Requisition Item Table 46 is shown in Appendix III. Similar Hit Lists 47 are produced when various searches are performed from the Search Input screen shown in Appendix VII. When a Hit List 47 is depicted on monitor 22, the underlying catalog text and pictures (in either partial or complete form) are typically collected in a memory location for rapid viewing, printing or other use.

When multiple catalogs are present in catalog database 36, search program 50 contains a function associated with the catalog symbol of the footer bar and screen window (not shown) for selecting catalogs to be searched. For example, the following choices might be available:

1. Fisher General Catalog 93–94;
2. Fairmont Supplies Catalog;
3. NIST Standards Catalog; and
4. Promega Biological Research Products Catalog.

Fairmont and NIST catalogs list products not in the Fisher General Catalog, but many of the products listed in the Promega catalog are also listed in the Fisher General Catalog (identified by corresponding Fisher catalog numbers). If searching for a molecular biology product, the user would select the Fisher and Promega catalogs. TV/2 search pro-

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gram 50 would then concatenate those two catalogs to perform a keyword, catalog number or other subject search and generate a Hit List of pages (panels) from both catalogs where the searched-for items were found. Similarly, the user might select the Fisher and NIST catalogs when searching for quality control standards or might select the Fisher and Fairmont catalogs when searching for supplies.

If the search is initiated from requisition/purchasing program 40, for example from the Requisition Management data screen 110 of the Fisher RIMS system, then the catalogs searched can be determined by the information provided. If, for example, Promega is indicated as the desired requisition item vendor, interface 60 would direct TV/2 search program 50 to search the Fisher and Promega catalogs. If Fairmont is indicated as vendor, the interface would direct TV/2 to search the Fairmont and Fisher catalogs. If no catalog delimiting information is entered for the item desired to be requisitioned, interface 60 would be set up to search only the Fisher catalog or, alternatively, to search all catalogs in catalog database 36.

Once Hit List 47 has been created by TV/2 search program 50, the user can view it and select particular ones of the located catalog items for Order List 48 that is being created in Shell 52, as shown in FIG. 1C. For example, a search for "Eco RI," a restriction enzyme, may have uncovered five entries in the Promega catalog (identified by Promega catalog numbers R6011, R6012, R6013, R6015 and R401) and five entries in the Fisher catalog (identified by Fisher catalog numbers PRR6011, PRR6012, PRR6013, PRR6015 and PRR4014). If the user selected PRR6012 from the Fisher catalog, Fisher catalog number PRR6012 would be added as an entry to the Items Selected screen, with VN00000001 (identifying the vendor as distributor Fisher) accompanying it in the Order List 48. If the user instead selected the item identified by catalog number R6012 from the Promega catalog, then Promega catalog number R6012 would be added as an entry to the Items Selected screen, with VN00005860 (identifying the vendor as Promega) accompanying it in the Order List. In either case, the information transmitted to REQUI program 44A of Fisher RIMS system 40 would also include description, list price and other information taken from the catalog database from which the selection was made. When the resultant requisition is sourced, however (as described below), Distributor's mainframe host computer 10 would recognize the entry for the item from vendor Promega's catalog (R6012, 00005860) as corresponding to that same item available from Fisher's catalog (PRR6012, 00000001). The system thus would transmit back the Customer's contract price and availability for corresponding item PRR6012 as a type 03 (regular Distributor) product available from one of distributor's inventory locations. A purchase order then would be generated for this corresponding Distributor item as further described below.

By contrast, an item selected from the Fairmont catalog would be transferred to Fisher RIMS system 40 with the vendor number for Fairmont, and would be recognized during inventory sourcing as either a type 07 product (that Distributor orders from Fairmont) or as a type 05 item (that Customer orders from Fairmont as an Administrative Purchase). In either of these two cases, a purchase order would be generated for an item, corresponding to a desired catalog item, that is identified by the same Fairmont catalog number that was requisitioned.

After the desired item has been selected from the Hit List 47 by double clicking on that item TV/2 search program 50 can be used to bring up for viewing on monitor 22, or

**Tab L. “Means for selecting the product catalogs to search”****Means: Structure #2**

<b><u>Lawson’s Proposed Definition</u></b>	<b><u>Lawson’s Proposed Definition</u></b>
<b><u>Means:</u></b> Two means for selecting two or more product catalogs are disclosed:	
<b><u>Structure No. 2.</u></b> Software initiated from requisition/purchasing system (40 or 240) running on local computer (20 or 220) that consists of the following steps:	<p>“As shown in the embodiment of <b>FIG. 1A</b>, Fisher RIMS 40 and TV/2 search program 50 are run by local computer 20.” (’683 patent, Detailed Description of the Drawings, 4:7-10 (emphasis added))</p> <p><b>Figure 1A</b> shows RIMS (40) running on local computer (20):</p> <p style="text-align: right;"><b>FIG. 1A</b></p> <p>(’683 patent, Fig. 1A)</p> <p><b>Figure 1B</b> shows Requisition/Purchasing Program (240) running on local computer (220):</p>

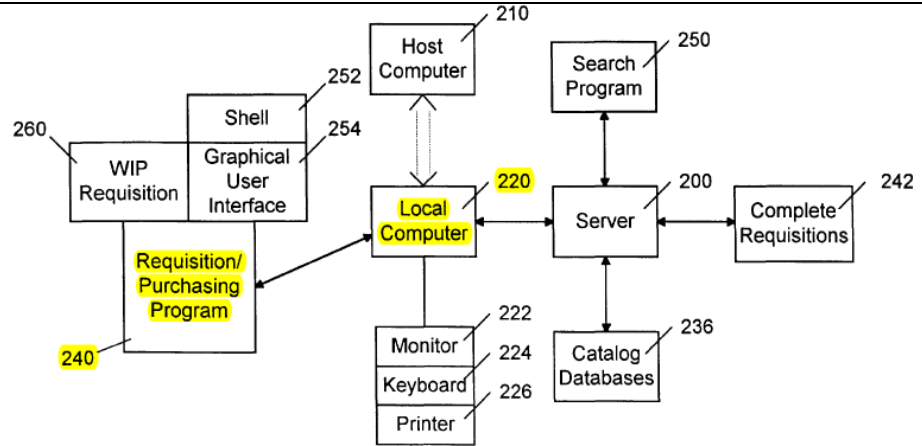


FIG. 1B

('683 patent, Fig. 1B)

"Local computer 20 is preferably capable of running both a RIMS program 44 and Shell program 52 at the same time (i.e., in a multi-tasking environment), but the user of local computer 20 usually sees only RIMS program 44 or Shell program 52 at one time in the foreground on monitor 22." ('683 patent, Detailed Description of the Drawings, 4:30-35)

"In that environment, search program 250, which preferably comprises TV/2 search program 250, and catalog databases 236 are stored on file server 200. . . . One or more of these may be copied from server 220 when needed." ('683 patent, Detailed Description of the Invention, 17:3-17)

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requisition/purchasing system for generating a requisition including entries for the desired catalog items.

In accordance with the invention, an electronic sourcing system and method used by the system are provided. The system includes a computer that maintains a catalog database of data including product information (such as product identification information, and descriptive information) relating to catalog items available from vendor product catalogs, and a means for building (generating) a requisition including at least one requisitioned item. Information at least partially identifying an item desired to be requisitioned is entered by a user, and utilized by a means for searching the database for catalog items matching that information and for selecting at least one catalog item located as a result of the search. Text describing the catalog items, and images of the items, may be viewed. Data identifying selected catalog items are communicated to the requisition building means, which generates a requisition including entries for items corresponding to the selected catalog items. Additionally, the invention includes a means for checking the availability in one or more inventory locations of the corresponding desired catalog items, and for generating one or more purchase orders for desired items from inventory locations stocking the items.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and advantages of the invention will be apparent from consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1A is a block diagram showing one exemplary embodiment of the overall system of the present invention;

FIG. 1B is a block diagram showing another exemplary embodiment of the overall system of the present invention;

FIG. 1C is a block diagram showing a portion of the embodiment of FIG. 1A in greater detail;

FIG. 2 is a block diagram showing the flow of control and interaction between the various programs and data screens of the programs used for requisition management and vendor catalog searching of the present invention; and

FIG. 3 is a block diagram showing a portion of a system (Fisher RIMS) for requisition management, including the electronic sourcing system of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIGS. 1A and 1B show preferred embodiments of the electronic sourcing system 5 of the present invention. As shown in FIG. 1A, a local computer 20, which is preferably located at or near a Customer site and the site of Just-In-Time ("JIT") Inventory, is preferably used by an on-site Customer Service Representative ("CSR") dedicated to a Customer to assist that Customer in requisitioning items needed.

Local computer 20 includes conventional color monitor 22 and alphanumeric keyboard 24 including twelve function keys F1, F2, . . . F12. Local computer 20 is also coupled to printer 26.

Local computer 20 is preferably a conventional micro-computer (such as a 386-, 486- or Pentium-class personal computer) capable of operating the required programs and of transmitting and receiving the required communications, running the OS/2 operating system 32 and also running the CICS OS/2 application 34, both of which are available from IBM.

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Electronic sourcing system 5 also includes a requisition/purchasing system 40, preferably but not necessarily the Fisher RIMS system, and a search program 50 that is capable of searching through large volumes of information quickly and accurately. Preferably but not necessarily, the Technical Viewer 2 search program ("TV/2"), available from IBM, is used as search program 50. **As shown in the embodiment of FIG. 1A, Fisher RIMS 40 and TV/2 search program 50 are run by local computer 20.**

Fisher RIMS system 40 is comprised of numerous program modules, including several programs 44, which operate within CICS environment 34 of OS/2 operating system 32. Programs 44 include, among others, Requisition Management ("REQI") program 44A, Inventory Sourcing program or programs 44B, Requisition Maintenance program 44C, Customer Variable program 44D, and Order Header program 44E, each of which will later be described in greater detail. REQI program 44A is most often the RIMS program 44 that interfaces with TV/2 search program 50.

Fisher RIMS system 40 also includes several Fisher RIMS databases 42. These databases 42 preferably include requisition databases 42A, inventory databases 42B, and customer-specific databases 42C, each maintained within OS/2 operating system 32.

Local computer 20 also preferably runs Shell program 52, which operates under search program 50 and is used to customize search program 50 to generate Order Lists 48 (shown in FIG. 1C) with particular fields of formatted data about the items selected using search program 50. **Local computer 20 is preferably capable of running both a RIMS program 44 and Shell program 52 at the same time (i.e., in a multi-tasking environment), but the user of local computer 20 usually sees only RIMS program 44 or Shell program 52 at one time in the foreground on monitor 22.**

Local computer 20 is also provided with a catalog database 36 comprised preferably of at least two vendor product catalogs. The catalogs, and hence catalog database 36, preferably include such information as part number, price, catalog number, vendor name or I.D., and vendor catalog number, as well as textual information and images of or relating to the catalog products. The nature of the business that the Customer using electronic sourcing system 5 conducts will determine which product catalogs are made a part of catalog database 36.

A feature of the present invention is the ability to search multiple catalogs from different suppliers. For example, catalog database 36 can contain the catalog or catalogs published by a vendor Distributor, having Distributor's catalog numbers for all listed products and vendor manufacturer's part numbers for many of the listed products. Catalog database 36 can further contain catalogs published by some of the vendor manufacturers, listing the manufacturers' part numbers for certain products correspondingly listed in the Distributor's catalogs and for certain products not listed in the Distributor's catalogs. Catalog database 36 can further contain catalogs published by outside suppliers, whether other manufacturers or other distributors, listing such vendor's products different from those in the Distributor's catalogs.

Where the Fisher RIMS system is in use with electronic sourcing system 5, a host computer 10 located at a Distributor site is also provided, as shown in FIG. 1A. Host computer 10 controls all inventory, pricing and requisitioning operations of the Distributor's regularly stocked items using host pricing and inventory databases 11. Host pricing and inventory databases 11 may include such information as: descrip-



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tions where a large number of CSRs may be placing orders directly on Distributor's host computer 210 for thousands of different customers who call in. In that environment, search program 250, which preferably comprises TV-2 search program 250, and catalog databases 236 are stored on file server 200. In this environment, file server 200 is a large personal computer, a work station or a mini-computer such as an IBM AS/400. Alternatively, the server 200 and a minicomputer (such as an IBM AS/400) can be independently connected to each local computer 200. Each CSR has a local personal computer 220 having a monitor 222, a keyboard 224 and a printer 226. Local computer 220 is provided with programs including requisition/purchasing program 240, Shell program 252 and a graphic user interface 254 (preferably EASEL Workbench program 254 for OS/2) for listing items. One or more of these may be copied from server 220 when needed. Work-in-progress requisitions 260 are established for each customer and are attached to graphic user interface 254. Server 200 maintains complete requisitions 242, in a manner similar to the manner in which local computer 20 maintains requisition databases 42 in the embodiment shown in FIG. 1A.

Normally, in such an environment, the CSR creates Order lists for customers by entering Distributor catalog numbers into graphic user interface 254 and connecting to the Distributor mainframe 210 for price and availability. For this purpose, each local computer is connected to host computer 210 via a phone/dataline and either a gateway or a mini-computer acting as a local host. When a customer asks for products by manufacturer part number or a competitor's catalog number, the CSR has access to cross-reference files, as earlier described, either maintained on the local host or maintained on the Distributor host computer 210.

Appropriate Distributor catalogs and manufacturer catalogs then are consulted, using TV-2 search program 250 and proper selection of Distributor catalogs and of catalogs and bulletins from manufacturers whose products Distributor regularly sells. Catalogs and bulletins are contained in catalog database 236. The resultant lists of products are then transferred by Shell program 252 to a work-in-progress requisition 260, and then entered from graphical user interface 254 directly onto Distributor's mainframe computer 210 as orders from the applicable customer to Distributor. The CSR, knowing which items are available from which Distributor warehouse and direct-shipping supplier, then may divide the customer's requested items into multiple orders, so as to assure that each order is completely filled by a single shipment. In this regional environment, file server 200 or the minicomputer acting as local host can maintain files of completed requisitions 242 which can be subsequently used for generating reports for customers in the region. Reports can be generated either from such local data or from data periodically downloaded to the local host from Distributor's host computer 210.

Another environment where the present invention can be used is in Distributor's purchasing department. The item lists created in that environment can include lists of items Distributor does not regularly stock or purchase, but for which particular customers indicate a requirement to buy. The file server 200 in that environment contains TV-2 search program 250, EASEL graphical user interface 254 and multiple catalog databases 236 containing catalogs similar to the Fairmont and NIST catalogs described above for the embodiment of FIG. 1A. The Distributor purchasing employee can receive by phone or via Distributor's host computer 210 requests for items not shown on Distributor's host databases either as regular products (type 03) or third

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party items purchased for particular customers on a regular basis (type 07 items). Transmitting certain such requirements to the applicable Distributor purchasing employee can be a function of the inventory sourcing routines of host computer, or may be directed by the Distributor CSR interfacing with the customer.

The Distributor purchasing employee can search appropriate catalogs using TV-2 search program 250, and can transfer the "Items Selected" to a product list in EASEL interface 254. The resultant list might display, for example, supplier part number, supplier, list price, product and catalog page, with access to other fields such as complete description (up to 500 characters). The Distributor purchasing employee can then either forward the information to the CSR, customer end user or customer purchasing employee who requested the item (to confirm that the requirement is being met) or contact the supplier to confirm pricing and availability. Once responses from either or both have been obtained, the Distributor purchasing employee can use the item list in EASEL interface 254 to create one or more of the following purchase orders:

1. an order from the customer to the supplier (an Administrative Purchase);
2. an order from the customer to Distributor (for a type 07 product); and
3. an order from the Distributor to the supplier (usually providing for direct shipment from the supplier to the customer or to a JIT site maintained by Distributor for the customer).

From the foregoing description, it should be apparent that the network arrangements of FIG. 1B can be used to apply the present invention in a variety of contexts. The context will dictate which catalog databases 236 are provided on file server 200: in the regional CSR environment, Distributor's catalogs can be present with a variety of catalogs and bulletins from manufacturers that Distributor regularly represents and a limited selection of outside suppliers; and in the Distributor purchasing environment, the number of outside supplier catalogs will be increased. The number of client (local) computers 220 and the number and size of catalog databases 236 will help dictate what size file server 200 is required. The operating environment (regional CSR site, on-site CSR, on-site CSR networked with Customer end users and with purchaser personnel or Distributor purchasing site) will also affect the catalog databases 236 included, file server 200 size and requisition/purchasing program 240 used. In some situations (e.g., purchasing) each client computer has an independent copy of requisition/purchasing program 240; in others (e.g., on-site CSR) a single copy of the requisition/purchasing program 240 is maintained with associated local databases on the server 200. Where the requisition/purchasing program 240 and local databases are maintained on file server 200, the local database is updated after each use for the benefit of subsequent users. For example, in an environment using Fisher RIMS for requisition/purchasing program 240, if a NIST standard is selected using TV-2 search program 250 and ordered using Fisher RIMS 240 (as either a type 07 purchase from Distributor or a type 05 administrative purchase from NIST), that item is available in the applicable database for subsequent requisitions. For example, a NIST standard ordered as a type 05 item will be stored in the local database on file server 200, with NIST as the vendor for subsequent administrative purchases by Customer. A NIST standard ordered from Distributor as a type 07 item will be stored in Distributor's host databases as a type 07 available to Distributor from NIST. The local databases on file server 200



**Tab L. “Means for selecting the product catalogs to search”****Means: Structure #2**

<b><u>Lawson’s Proposed Definition</u></b>	<b><u>Lawson’s Proposed Definition</u></b>
<p><b><u>Part 2a.</u></b> entering vendor identification information into requisition/purchasing system; and</p> <p><b><u>Part 2b.</u></b> communicating vendor identification from requisition/purchasing system to catalog search program running on same local computer via the DDE protocol of interface (60).</p>	<p>“If the <b>search</b> is initiated from requisition/purchasing program 40, for example from the Requisition Management data screen 110 of the Fisher RIMS system, <b>then the catalogs searched can be determined by the information provided.</b> If, for example, Promega is indicated as <b>the desired requisition item vendor, interface 60</b> would direct TV/2 search program 50 to search the Fisher and Promega catalogs. <b>If Fairmont is indicated as vendor, the interface would direct TV/2 to search the Fairmont and Fisher catalogs.</b>” (’683 patent, Detailed Description of the Invention, 10:8-16 (link to function emphasized))</p> <p>The specification describes interface (60):  “As shown in <b>FIGS. 1C and 2</b>, interface 60 is also a part of electronic sourcing interface system 5. <b>Interface 60 communicates</b> shared data between requisition/purchasing system 40 and search program 50. <b>Interface 60 is preferably based upon the dynamic data exchange (‘DDE’) protocol</b> provided by OS/2 operating system 32. As shown in <b>FIG. 2</b>, interface 60 preferably includes three linking programs to interface requisition/purchasing system 40 and search program 50: ESRC program 70, ESCP program 80 and DDE LINK 90.” (’683 patent, Detailed Description of the Invention, 5:19-28 (emphasis added))</p>

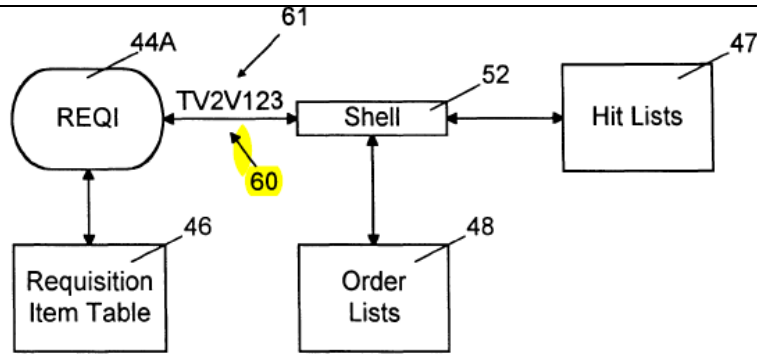


FIG. 1C

('683 patent, Fig. 1C)

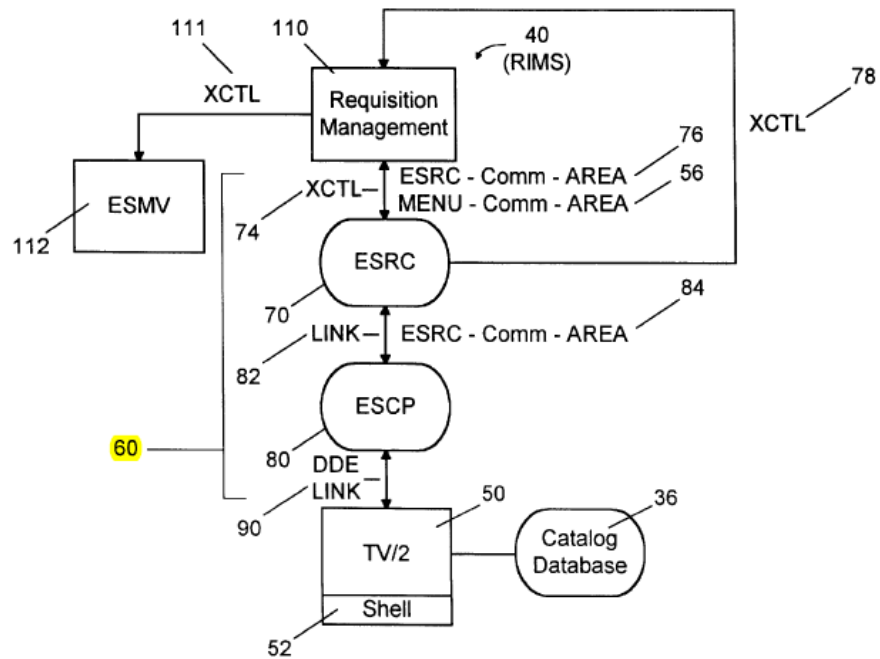


FIG. 2

('683 patent, Fig. 2)

“A typical data exchange may begin with requisition/purchasing system 40 (which, in the illustrated embodiment, is the Fisher RIMS system) requesting information from catalog database 36 via search program 50. Once a search by search program 50 has been completed, the selected information will be communicated to requisition/purchasing system 40 via interface 60.” ('683 patent, Detailed Description of the Invention, 5:29-35)

“Local computer 20 is preferably a conventional microcomputer (such as a 386-, 486- or Pentium-class personal computer) capable of operating the required programs and of transmitting and receiving the required communications, running the OS/2 operating system 32 and also running the CI CS OS/2 application 34, both of which are available from IBM.” (’683 patent, Detailed Description of the Invention, 3:61-67)

“Alternatively, if the search of catalog database 36 is initiated from search program 50, the information selected from the search is returned to requisition/procurement system 40 via interface 60.” (’683 patent, Detailed Description of the Invention, 5:36-39)

“As shown in **FIG. 2**, interface 60 preferably includes three linking programs to interface requisition/purchasing system 40 and search program 50: ESRC program 70, ESCP program 80 and DDE LINK 90.” (’683 patent, Detailed Description of the Invention, 5:24-28 (emphasis added))

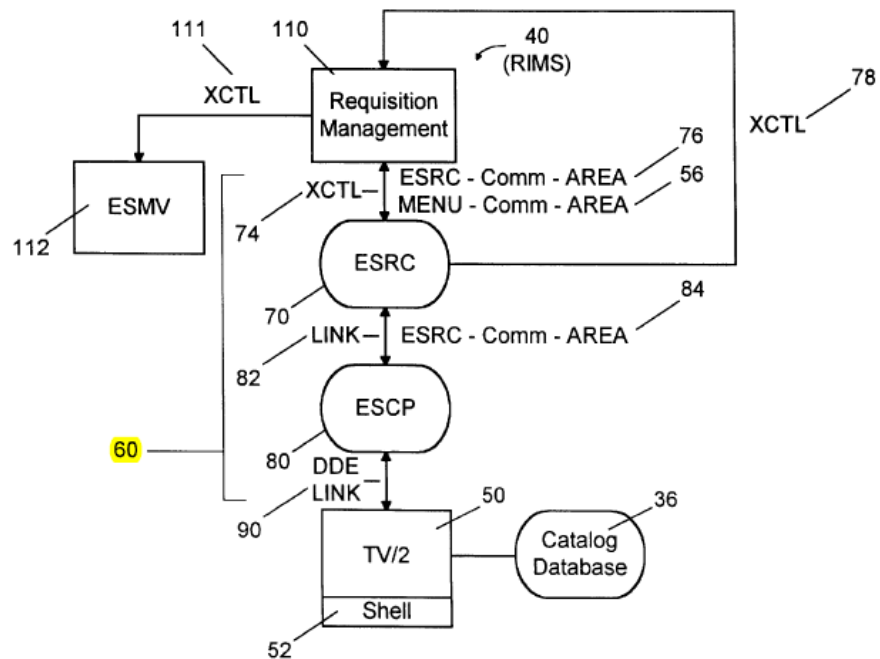


FIG. 2

('683 patent, Fig. 2)

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return to REQUI program 44A and its associated Requisition Management data screen 110 without processing any of the records.

ESCP program 80 links with Shell 52 and TV/2 search program 50 via DDE LINK 90. Shell 52 and TV/2 search program 50 search in catalog database 36 for the item or items desired to be requisitioned that has or have been passed from ESRC program 70 to ESCP program 80. Catalog database 36 contains the following fields: vendor name, vendor number, vendor part (catalog) number, product description, list price, page number, quantity, unit, catalog text, and catalog images. Shell 52 and TV/2 search program 50 may, if desired, search the keyword field or any other field shown in Appendix VII. However, not all fields may appear on the monitor 22 of local computer 20, although they are stored in memory.

After the user has pressed the F11 key from Requisition Management data screen 110 and control has been passed from REQUI program 44A to Shell 52 and TV/2 search program 50, monitor 22 of local computer 20 will show a footer bar representative of Shell 52 at all times that the user is in the TV/2 search program 50. The footer bar, which also includes appropriate icons, is used to make choices within Shell 52. A sample of the footer bar (without the icons) representing Shell 52 is shown at the base of Appendices III–VII. In the screens of Appendices III–VI, this footer bar is active to select functions. In the screen of Appendix VII, this footer bar is in the background and another footer bar is used to select functions.

If the user has marked an item on Requisition Management data screen 110 with the designation “S,” the entered data at least partially describing that item will be sent to Shell 52 and TV/2 search program 50A in the manner described above. TV/2 search program 50 will search catalog database 36 for all items that match the search field sent over from REQUI program 44A and Requisition Management data screen 110. When a search is performed in Shell 52 and search program 50, a Hit List 47 is produced, as indicated in FIG. 1C. The user would see on monitor 22 of local computer 20 a Hit List 47 screen representing limited data about all matching catalog items that were located in catalog database 36 as a result of the search. A sample Hit List 47 produced from a search initiated when the entry “OVENS” is received as the description or keyword by search program 50 from Requisition Item Table 46 is shown in Appendix III. Similar Hit Lists 47 are produced when various searches are performed from the Search Input screen shown in Appendix VII. When a Hit List 47 is depicted on monitor 22, the underlying catalog text and pictures (in either partial or complete form) are typically collected in a memory location for rapid viewing, printing or other use.

When multiple catalogs are present in catalog database 36, search program 50 contains a function associated with the catalog symbol of the footer bar and screen window (not shown) for selecting catalogs to be searched. For example, the following choices might be available:

1. Fisher General Catalog 93–94;
2. Fairmont Supplies Catalog;
3. NIST Standards Catalog; and
4. Promega Biological Research Products Catalog.

Fairmont and NIST catalogs list products not in the Fisher General Catalog, but many of the products listed in the Promega catalog are also listed in the Fisher General Catalog (identified by corresponding Fisher catalog numbers). If searching for a molecular biology product, the user would select the Fisher and Promega catalogs. TV/2 search pro-

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gram 50 would then concatenate those two catalogs to perform a keyword, catalog number or other subject search and generate a Hit List of pages (panels) from both catalogs where the searched-for items were found. Similarly, the user might select the Fisher and NIST catalogs when searching for quality control standards or might select the Fisher and Fairmont catalogs when searching for supplies.

If the search is initiated from requisition/purchasing program 40, for example from the Requisition Management data screen 110 of the Fisher RIMS system, then the catalogs searched can be determined by the information provided. If, for example, Promega is indicated as the desired requisition item vendor, interface 60 would direct TV/2 search program 50 to search the Fisher and Promega catalogs. If Fairmont is indicated as vendor, the interface would direct TV/2 to search the Fairmont and Fisher catalogs. If no catalog delimiting information is entered for the item desired to be requisitioned, interface 60 would be set up to search only the Fisher catalog or, alternatively, to search all catalogs in catalog database 36.

Once Hit List 47 has been created by TV/2 search program 50, the user can view it and select particular ones of the located catalog items for Order List 48 that is being created in Shell 52, as shown in FIG. 1C. For example, a search for “Eco RI,” a restriction enzyme, may have uncovered five entries in the Promega catalog (identified by Promega catalog numbers R6011, R6012, R6013, R6015 and R401) and five entries in the Fisher catalog (identified by Fisher catalog numbers PRR6011, PRR6012, PRR6013, PRR6015 and PRR4014). If the user selected PRR6012 from the Fisher catalog, Fisher catalog number PRR6012 would be added as an entry to the Items Selected screen, with VN00000001 (identifying the vendor as distributor Fisher) accompanying it in the Order List 48. If the user instead selected the item identified by catalog number R6012 from the Promega catalog, then Promega catalog number R6012 would be added as an entry to the Items Selected screen, with VN00005860 (identifying the vendor as Promega) accompanying it in the Order List. In either case, the information transmitted to REQUI program 44A of Fisher RIMS system 40 would also include description, list price and other information taken from the catalog database from which the selection was made. When the resultant requisition is sourced, however (as described below), Distributor’s mainframe host computer 10 would recognize the entry for the item from vendor Promega’s catalog (R6012, 00005860) as corresponding to that same item available from Fisher’s catalog (PRR6012, 00000001). The system thus would transmit back the Customer’s contract price and availability for corresponding item PRR6012 as a type 03 (regular Distributor) product available from one of distributor’s inventory locations. A purchase order then would be generated for this corresponding Distributor item as further described below.

By contrast, an item selected from the Fairmont catalog would be transferred to Fisher RIMS system 40 with the vendor number for Fairmont, and would be recognized during inventory sourcing as either a type 07 product (that Distributor orders from Fairmont) or as a type 05 item (that Customer orders from Fairmont as an Administrative Purchase). In either of these two cases, a purchase order would be generated for an item, corresponding to a desired catalog item, that is identified by the same Fairmont catalog number that was requisitioned.

After the desired item has been selected from the Hit List 47 by double clicking on that item TV/2 search program 50 can be used to bring up for viewing on monitor 22, or

tions of the items and the quantities thereof available at a particular Distributor warehouse and at other Distributor warehouses; item records for each Product regularly sold by the Distributor; discount records by Customer; and cross-references from the Distributor's catalog number to its corresponding vendor's part (catalog) number and to similar corresponding catalog numbers of other vendors (suppliers or distributors) for the same Product.

Host computer 10 and local computer 20 are preferably linked point-to-point or in a network employing the formats and protocols of IBM's System Network Architecture ("SNA"). Host computer 10 can be substantially any mainframe or minicomputer capable of running the desired programs and conducting the required communications. Preferably, host computer 10 is a mainframe computer, such as an IBM Model 3090, running the MVS operating system, the MVS-CICS application and a Virtual Telecommunication Access Method communications network.

As shown in FIGS. 1C and 2, interface 60 is also a part of electronic sourcing interface system 5. Interface 60 communicates shared data between requisition/purchasing system 40 and search program 50. Interface 60 is preferably based upon the dynamic data exchange ("DDE") protocol provided by OS/2 operating system 32. As shown in FIG. 2, interface 60 preferably includes three linking programs to interface requisition/purchasing system 40 and search program 50: ESRC program 70, ESCP program 80 and DDE LINK 90.

A typical data exchange may begin with requisition/purchasing system 40 (which, in the illustrated embodiment, is the Fisher RIMS system) requesting information from catalog database 36 via search program 50. Once a search by search program 50 has been completed, the selected information will be communicated to requisition/purchasing system 40 via interface 60.

Alternatively, if the search of catalog database 36 is initiated from search program 50, the information selected from the search is returned to requisition/procurement system 40 via interface 60.

The start up of electronic sourcing system 5 (FIG. 1A) may be user-initiated or automatically started when the operating system, preferably OS/2 system 32, is brought up on local computer 20. An application-name string 61 must be identified to label interface 60. As shown in FIG. 1C, electronic sourcing system 5 by convention will use "TV2V123," "TV2V124," "TV2V125," etc. as application names 61 supporting the user's requesting service.

Preferably, application names 61 correspond to virtual terminal sessions that exist in the CICS system 34 of requisition/purchasing system 40. There will be a one-to-one correspondence between applications started (such as Shell 52) and CICS virtual terminals in use at a location of requisition/procurement system 40 (such as REQI program 44A). Local computer 20 will query OS/2 operating system 32 to determine the next application-name string 61 to create at start-up. The application-name strings 61 will be created in sequence with V123 being created first, V124 created second, etc. Each application will create only one application name-string 61 to support its user in the CICS environment 34.

If the Fisher RIMS system has been selected as requisition/purchasing system 40, and the TV/2 search program has been selected as search program 50, CICS OS/2 applications 34 must share a workstation with a TV/2 search program 50.

The data passed by interface 60 preferably comprise all or a subset of the following twelve fields: vendor name, vendor

number, vendor part (catalog) number, product description, bid price, list price, keyword, page number, quantity, unit, catalog text, and catalog images. Because of the amount of data for catalog images present in database 36 and viewed on monitor 22, these data are usually not passed via interface 60. Any of the above-listed fields may be filled by requisition/purchasing system 40 prior to requesting a search of catalog database 36 by search program 50. However, requisition/purchasing system 40 is not required to pass any data to search program 50. If a field is not passed, that field will be filled with spaces. The fields that are filled with data will assist search program 50 in executing its first search against a specific catalog contained in catalog database 36.

A search priority exists when more than one field is provided by requisition/purchasing system 40. The priority is as follows: (1) part (catalog) number; (2) keyword; and (3) page number. The search will start with priority (1) and proceed through priority (3) in sequence until a search produces products matching the search criteria. At that time, the search will return the matching product information to requisition/purchasing system 40 and stop at the highest priority resulting in a match.

The operation of electronic sourcing system 5 of the present invention will now be more particularly described in the context of FIGS. 1A, 1C, 2 and 3. In FIGS. 2 and 3, the rectangles represent data screens as well as programs associated with those data screens. The rounded rectangles represent programs not associated with data screens such that, while these programs are running, the prior data screen may remain visible without, necessarily, being operational for the input of data. The programs associated with the data screens enable the user of local computer 20 to display and modify the contents of various tables associated with particular data screens. The following description illustrates the use of the Fisher RIMS system as requisition/purchasing system 40, and the TV/2 search program as search program 50. However, it will be understood that the present invention is not limited to such system or program.

Preferably, a user will start the electronic sourcing system 5 from Fisher RIMS system 40. Requisitioning on Fisher RIMS system 40 in context of the electronic sourcing system 5 of the present invention is illustrated in pertinent part in FIG. 3 (and is fully described in U.S. Pat. No. 5,712,989. As data (e.g., Account Number, Requisition Number and Stock Numbers) associated with a single requisition are entered through the various data screens on local computer 20, that computer creates a set of Requisition Tables (including a Requisition Item Table 46, shown in FIG. 1C) for that particular requisition. The Requisition Tables are stored in Requisition databases 42A (shown in FIG. 1A), and can be accessed by local computer 20 using the Requisition Number to find the desired table.

The first step in creating a requisition in Fisher RIMS system 40 involves entry by the user of information in the Order Header program 44D (shown in FIG. 1A), which has an associated Order Header data screen 100 (FIG. 3). A sample of an actual Order Header data screen 100 is set forth in Appendix I. The user enters an Account Number, which generally causes the correct name and address associated with that Account Number to be entered into the appropriate fields of Order Header data screen 100. The user must also enter a Requisition Number in the appropriate field of the Order Header screen 100. Various additional information may also be entered.

At the bottom of Order Header data screen 100 are several fields that describe the function of various function keys.



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requisition/purchasing system for generating a requisition including entries for the desired catalog items.

In accordance with the invention, an electronic sourcing system and method used by the system are provided. The system includes a computer that maintains a catalog database of data including product information (such as product identification information, and descriptive information) relating to catalog items available from vendor product catalogs, and a means for building (generating) a requisition including at least one requisitioned item. Information at least partially identifying an item desired to be requisitioned is entered by a user, and utilized by a means for searching the database for catalog items matching that information and for selecting at least one catalog item located as a result of the search. Text describing the catalog items, and images of the items, may be viewed. Data identifying selected catalog items are communicated to the requisition building means, which generates a requisition including entries for items corresponding to the selected catalog items. Additionally, the invention includes a means for checking the availability in one or more inventory locations of the corresponding desired catalog items, and for generating one or more purchase orders for desired items from inventory locations stocking the items.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and advantages of the invention will be apparent from consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1A is a block diagram showing one exemplary embodiment of the overall system of the present invention;

FIG. 1B is a block diagram showing another exemplary embodiment of the overall system of the present invention;

FIG. 1C is a block diagram showing a portion of the embodiment of FIG. 1A in greater detail;

FIG. 2 is a block diagram showing the flow of control and interaction between the various programs and data screens of the programs used for requisition management and vendor catalog searching of the present invention; and

FIG. 3 is a block diagram showing a portion of a system (Fisher RIMS) for requisition management, including the electronic sourcing system of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIGS. 1A and 1B show preferred embodiments of the electronic sourcing system 5 of the present invention. As shown in FIG. 1A, a local computer 20, which is preferably located at or near a Customer site and the site of Just-In-Time ("JIT") Inventory, is preferably used by an on-site Customer Service Representative ("CSR") dedicated to a Customer to assist that Customer in requisitioning items needed.

Local computer 20 includes conventional color monitor 22 and alphanumeric keyboard 24 including twelve function keys F1, F2, . . . F12. Local computer 20 is also coupled to printer 26.

Local computer 20 is preferably a conventional micro-computer (such as a 386-, 486- or Pentium-class personal computer) capable of operating the required programs and of transmitting and receiving the required communications, running the OS/2 operating system 32 and also running the CICS OS/2 application 34, both of which are available from IBM.

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Electronic sourcing system 5 also includes a requisition/purchasing system 40, preferably but not necessarily the Fisher RIMS system, and a search program 50 that is capable of searching through large volumes of information quickly and accurately. Preferably but not necessarily, the Technical Viewer 2 search program ("TV/2"), available from IBM, is used as search program 50. As shown in the embodiment of FIG. 1A, Fisher RIMS 40 and TV/2 search program 50 are run by local computer 20.

Fisher RIMS system 40 is comprised of numerous program modules, including several programs 44, which operate within CICS environment 34 of OS/2 operating system 32. Programs 44 include, among others, Requisition Management ("REQI") program 44A, Inventory Sourcing program or programs 44B, Requisition Maintenance program 44C, Customer Variable program 44D, and Order Header program 44E, each of which will later be described in greater detail. REQI program 44A is most often the RIMS program 44 that interfaces with TV/2 search program 50.

Fisher RIMS system 40 also includes several Fisher RIMS databases 42. These databases 42 preferably include requisition databases 42A, inventory databases 42B, and customer-specific databases 42C, each maintained within OS/2 operating system 32.

Local computer 20 also preferably runs Shell program 52, which operates under search program 50 and is used to customize search program 50 to generate Order Lists 48 (shown in FIG. 1C) with particular fields of formatted data about the items selected using search program 50. Local computer 20 is preferably capable of running both a RIMS program 44 and Shell program 52 at the same time (i.e., in a multi-tasking environment), but the user of local computer 20 usually sees only RIMS program 44 or Shell program 52 at one time in the foreground on monitor 22.

Local computer 20 is also provided with a catalog database 36 comprised preferably of at least two vendor product catalogs. The catalogs, and hence catalog database 36, preferably include such information as part number, price, catalog number, vendor name or I.D., and vendor catalog number, as well as textual information and images of or relating to the catalog products. The nature of the business that the Customer using electronic sourcing system 5 conducts will determine which product catalogs are made a part of catalog database 36.

A feature of the present invention is the ability to search multiple catalogs from different suppliers. For example, catalog database 36 can contain the catalog or catalogs published by a vendor Distributor, having Distributor's catalog numbers for all listed products and vendor manufacturer's part numbers for many of the listed products. Catalog database 36 can further contain catalogs published by some of the vendor manufacturers, listing the manufacturers' part numbers for certain products correspondingly listed in the Distributor's catalogs and for certain products not listed in the Distributor's catalogs. Catalog database 36 can further contain catalogs published by outside suppliers, whether other manufacturers or other distributors, listing such vendor's products different from those in the Distributor's catalogs.

Where the Fisher RIMS system is in use with electronic sourcing system 5, a host computer 10 located at a Distributor site is also provided, as shown in FIG. 1A. Host computer 10 controls all inventory, pricing and requisitioning operations of the Distributor's regularly stocked items using host pricing and inventory databases 11. Host pricing and inventory databases 11 may include such information as: descrip-



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tions of the items and the quantities thereof available at a particular Distributor warehouse and at other Distributor warehouses; item records for each Product regularly sold by the Distributor; discount records by Customer; and cross-references from the Distributor's catalog number to its corresponding vendor's part (catalog) number and to similar corresponding catalog numbers of other vendors (suppliers or distributors) for the same Product.

Host computer 10 and local computer 20 are preferably linked point-to-point or in a network employing the formats and protocols of IBM's System Network Architecture ("SNA"). Host computer 10 can be substantially any mainframe or minicomputer capable of running the desired programs and conducting the required communications. Preferably, host computer 10 is a mainframe computer, such as an IBM Model 3090, running the MVS operating system, the MVS-CICS application and a Virtual Telecommunication Access Method communications network.

As shown in FIGS. 1C and 2, interface 60 is also a part of electronic sourcing interface system 5. Interface 60 communicates shared data between requisition/purchasing system 40 and search program 50. Interface 60 is preferably based upon the dynamic data exchange ("DDE") protocol provided by OS/2 operating system 32. As shown in FIG. 2, interface 60 preferably includes three linking programs to interface requisition/purchasing system 40 and search program 50: ESRC program 70, ESCP program 80 and DDE LINK 90.

A typical data exchange may begin with requisition/purchasing system 40 (which, in the illustrated embodiment, is the Fisher RIMS system) requesting information from catalog database 36 via search program 50. Once a search by search program 50 has been completed, the selected information will be communicated to requisition/purchasing system 40 via interface 60.

Alternatively, if the search of catalog database 36 is initiated from search program 50, the information selected from the search is returned to requisition/procurement system 40 via interface 60.

The start up of electronic sourcing system 5 (FIG. 1A) may be user-initiated or automatically started when the operating system, preferably OS/2 system 32, is brought up on local computer 20. An application-name string 61 must be identified to label interface 60. As shown in FIG. 1C, electronic sourcing system 5 by convention will use "TV2V123," "TV2V124," "TV2V125," etc. as application names 61 supporting the user's requesting service.

Preferably, application names 61 correspond to virtual terminal sessions that exist in the CICS system 34 of requisition/purchasing system 40. There will be a one-to-one correspondence between applications started (such as Shell 52) and CICS virtual terminals in use at a location of requisition/procurement system 40 (such as REQI program 44A). Local computer 20 will query OS/2 operating system 32 to determine the next application-name string 61 to create at start-up. The application-name strings 61 will be created in sequence with V123 being created first, V124 created second, etc. Each application will create only one application name-string 61 to support its user in the CICS environment 34.

If the Fisher RIMS system has been selected as requisition/purchasing system 40, and the TV/2 search program has been selected as search program 50, CICS OS/2 applications 34 must share a workstation with a TV/2 search program 50.

The data passed by interface 60 preferably comprise all or a subset of the following twelve fields: vendor name, vendor

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number, vendor part (catalog) number, product description, bid price, list price, keyword, page number, quantity, unit, catalog text, and catalog images. Because of the amount of data for catalog images present in database 36 and viewed on monitor 22, these data are usually not passed via interface 60. Any of the above-listed fields may be filled by requisition/purchasing system 40 prior to requesting a search of catalog database 36 by search program 50. However, requisition/purchasing system 40 is not required to pass any data to search program 50. If a field is not passed, that field will be filled with spaces. The fields that are filled with data will assist search program 50 in executing its first search against a specific catalog contained in catalog database 36.

A search priority exists when more than one field is provided by requisition/purchasing system 40. The priority is as follows: (1) part (catalog) number; (2) keyword; and (3) page number. The search will start with priority (1) and proceed through priority (3) in sequence until a search produces products matching the search criteria. At that time, the search will return the matching product information to requisition/purchasing system 40 and stop at the highest priority resulting in a match.

The operation of electronic sourcing system 5 of the present invention will now be more particularly described in the context of FIGS. 1A, 1C, 2 and 3. In FIGS. 2 and 3, the rectangles represent data screens as well as programs associated with those data screens. The rounded rectangles represent programs not associated with data screens such that, while these programs are running, the prior data screen may remain visible without, necessarily, being operational for the input of data. The programs associated with the data screens enable the user of local computer 20 to display and modify the contents of various tables associated with particular data screens. The following description illustrates the use of the Fisher RIMS system as requisition/purchasing system 40, and the TV/2 search program as search program 50. However, it will be understood that the present invention is not limited to such system or program.

Preferably, a user will start the electronic sourcing system 5 from Fisher RIMS system 40. Requisitioning on Fisher RIMS system 40 in context of the electronic sourcing system 5 of the present invention is illustrated in pertinent part in FIG. 3 (and is fully described in U.S. Pat. No. 5,712,989. As data (e.g., Account Number, Requisition Number and Stock Numbers) associated with a single requisition are entered through the various data screens on local computer 20, that computer creates a set of Requisition Tables (including a Requisition Item Table 46, shown in FIG. 1C) for that particular requisition. The Requisition Tables are stored in Requisition databases 42A (shown in FIG. 1A), and can be accessed by local computer 20 using the Requisition Number to find the desired table.

The first step in creating a requisition in Fisher RIMS system 40 involves entry by the user of information in the Order Header program 44D (shown in FIG. 1A), which has an associated Order Header data screen 100 (FIG. 3). A sample of an actual Order Header data screen 100 is set forth in Appendix I. The user enters an Account Number, which generally causes the correct name and address associated with that Account Number to be entered into the appropriate fields of Order Header data screen 100. The user must also enter a Requisition Number in the appropriate field of the Order Header screen 100. Various additional information may also be entered.

At the bottom of Order Header data screen 100 are several fields that describe the function of various function keys.